<u>REMARKS</u>

Claims 25-59 are currently pending in the subject application and are presently under consideration. Objected-to claim 45 has been cancelled herein. Claim 25 has been amended herein in accordance with the Examiner's previous comments. Claim 32 has been amended herein to place such claim in proper dependent form, and claim 58 has been amended herein to further clarify the subject invention. The herein amendments do not raise new issues requiring further search or consideration – accordingly, entry and consideration thereof is requested. All pending claims with status identifiers can be found at pages 3-8. In addition, the specification has been amended as indicated at page 2.

Favorable reconsideration of the subject patent application and entry of the amendments is respectfully requested in view of the comments and amendments herein.

I.   Rejection of Claims 25-47 Under 35 U.S.C. §101

Claims 25-47 stand rejected under 35 U.S.C. §101. It is respectfully submitted that this rejection is improper for at least the following reasons. The subject claims produce a useful, concrete and tangible result.

> Because the claimed process [method] applies the Boolean principle to produce a useful, concrete, tangible result ... on its face the claimed process comfortably falls within the scope of §101. *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1358. (Fed.Cir. 1999); *See State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1373, 47 USPQ2d 1596, 1601 (Fed.Cir.1998) (finding a system implementing a financial management structure satisfied §101 because it constituted a practical application of a mathematical algorithm by producing a useful, concrete and tangible result).

Contrary to the Examiner's assertions, the subject claims recite an invention that provides a useful, concrete and tangible result. As provided above, the legal standard set forth by the Federal Circuit in *AT&T* for determining whether a claim is directed towards statutory subject matter is whether a claim can be applied in a practical application to

produce a useful, concrete and tangible result. The subject claims clearly meet the aforementioned legal standard. Independent claim 25 recites system components (a personality type generator and an attribute value predictor) that **calculate probabilities** relating to **personality type(s)** and **predict unknown attributes relating to a user based at least in part upon the calculated probabilities**, respectively, wherein such system components are implemented by a computer. Thus, claim 25 recites independent acts (analyzing and calculating) that are performed on non-abstract ideas (known attributes and probabilities). Such physical acts performed on the non-abstract ideas produce a concrete, tangible, and useful result – namely, predictions of unknown attributes. The subject specification provides ample examples of practical applications along with satisfactory explanations illustrating the usefulness of the claimed collaborative filtering system that enables the aforementioned prediction of unknown attributes; - such as; "The present invention relates to predicting and selectively collecting attribute values, such as a person's preferences, as might be indicated by item rankings for example" (*See* p. 1 lines 9-11), "... the probability that they (a user) will have a given value (*e.g.*, rating) for a valueless (*e.g.*, unrated) attribute (*e.g.*, item) may then be determined based on the user's personality type", (*See* p. 15, lines 17-20), and "The present invention concerns novel methods, apparatus, and data structures for predicting the values of attributes (*e.g.*, predicting item ratings to be used in recommending items) without at least some of the drawbacks of memory-based and model-based collaborative filtering systems."

In view of at least the above, it is readily apparent that the claimed invention produces a useful, concrete, tangible result (e.g., prediction(s) of unknown attributes) pursuant to *AT&T Corp. v. Excel Communications, Inc.* Accordingly, this rejection should be withdrawn.

II.   Rejection of Claims 25-26, 28, 30-34, 36-40, 44-55, and 57-59 Under 35 U.S.C. §102(b)

Claims 25-26, 28, 30-34, 36-40, 44-55, and 57-59 stand rejected under 35 U.S.C. §102(b) as being anticipated by Robinson (US 5,884,282). Withdrawal of this rejection is respectfully requested for at least the following reason. Robinson does not disclose each an every element of applicants' invention as claimed.

> For a prior art reference to anticipate, 35 U.S.C. §102 requires that "each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *In re Robertson,* 169 F.3d 743, 745, 49 USPQ2d 1949, 1950 (Fed. Cir. 1999) (*quoting Verdegaal Bros., Inc. v. Union Oil Co.,* 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)).

In particular, Robinson does not disclose, teach, or suggest *calculating probabilities that a user has a* <u>*personality type*</u> *substantially similar to* <u>*personality types*</u> *of a plurality of disparate users* as recited in independent claims 25, 48, and 58. In particular, Robinson does not disclose utilizing a *personality type* as recited in the claims and defined in the specification in connection with *predicting unknown attributes relating to a user.*

Applicants' claimed invention relates to a system and methodology that improves upon both memory-based and model-based collaborative filtering techniques utilized by conventional systems/methodologies. In particular, memory-based collaborative filtering techniques can be computationally expensive and provide no insight as to how a recommendation or prediction was generated. Model-based collaborative filtering techniques may require frequent updating of a model (*e.g.,* each time new data is entered, the model may require compiling). The subject invention as claimed makes up for such aforementioned deficiencies by utilizing a *personality type* of users by *calculating probabilities that a user has a personality type substantially similar to personality types of a plurality of disparate users.* A user's reported attribute values can be interpreted as a manifestation of their underlying *personality type.* More particularly, a *personality type* of a user is defined in the specification as a vector of the user's "true" values for attributes in a database, where "true" values are obtained by assuming that users report values with a distributed error. (*See* p. 15, lines 10-17). For example, a same user may report different ratings on different occasions. (*See* p. 24, line 24 - p. 25, line 14).

In contrast to the claimed invention, Robinson teaches a collaborative filtering system that merely compares ratings of items of an active user with previously obtained ratings of items of a plurality of disparate users to generate a prediction and/or provide the active user with a recommendation. Robinson also considers probabilities of a

random user in connection with providing a prediction and/or recommendation to the active user. More particularly, if a pair of users provides a same rating with respect to a movie, there is evidence that such pair of users has similar taste with respect to all movies. If, however, a vast majority of all users also provided the identical ranking to the movie, there is less evidence that the pair of users has similar taste with respect to all movies. Thus, Robinson teaches a system that compares ratings of items of an active user with previously obtained ratings of items of a plurality of disparate users in light of a probability that a random user would select substantially similar ratings. Robinson, however, does not disclose utilizing *personality types* as claimed and defined in the specification to generate predictive values for unknown attributes as recited in these claims and defined in the specification. The Examiner is reminded that the subject claims are to be interpreted in light of the specification, and that applicants can be their own lexicographer.

> It is black letter law that a patentee can choose to be his or her own lexicographer by clearly setting forth an explicit definition for a claim term that could differ in scope from that which would be afforded by its ordinary meaning. ***The specification acts as a dictionary when it expressly defines terms used in the claims*** or when it defines terms by implication. Where the patentee has clearly defined a claim term, that definition usually is dispositive; it is the single best guide to the meaning of a disputed term. *Guttman, Inc. v. Kopykake Enters.*, 302 F.3d 1352 (Fed. Cir. 2002) (citations omitted) (emphasis added).

As described above, a *personality type* is clearly defined as a vector of the user's "true" values for attributes in a database, where "true" values are obtained by assuming that users report values with a distributed error. (*See* p. 15, lines 10-17). Robinson does not consider that a user can alter attributes depending on context (*e.g.,* time of day, current mood of the user, ...), and nowhere discloses contemplating that users report values with distributed error. Accordingly, Robinson does not disclose, teach, or suggest employing *a personality type* in connection with *predicting unknown attributes*, much less *calculating a probability that the user has a personality type substantially similar to a disparate user* in association with *recommending an item to the user* as claimed.

Furthermore, with respect to dependent claims 30 and 50 (and all claims which depend therefrom), Robinson does not disclose, teach, or suggest *employing expected value of information* associated with as yet unseen attributes, to guide the *requesting of* one or more *attributes from a user* as recited in the aforementioned claims and described in the specification. The *expected value of information* is a decision-theoretic calculation that computes the value of obtaining particular attributes. For example, *expected value of information* can be employed to favorably order queries for attribute values, wherein the *expected value of information* is balanced with costs or difficulty of answering a question about preferences of a user. (*See* p. 15, line 26-page 16, line 1). Furthermore, *expected value of information* can be used to generate a number of most valuable questions to ask a user to limit a number of questions presented to such user (and/or a number of accesses to a database). (*See* p. 16, lines 1-6). Moreover, *expected value of information* can be employed to determine entries of a database to prune or ignore (*e.g.,* determine entries within a database that, if removed, would have minimal effect on accuracy recommendations). (*See* p. 16, lines 6-10).

In contrast to the subject invention as claimed, Robinson teaches a system that searches a data store for user(s) that have given a ranking to an item that has also been ranked by an active user. (*See* col. 6, lines 37-40). Upon locating these user(s), a similarity value with respect to the user(s) can be calculated, and a collection of user(s) most similar to the active user is utilized to generate predictions for such active user. Robinson, however, nowhere indicates that the formal notion of *expected value of information* is employed in connection with obtaining attributes or generating predictions. Applicants believe that the use of expected value of information with a collaborative filtering system is novel, and accordingly not taught or suggested by the cited references.

In view of at least the above, it is readily apparent that Robinson does not disclose, teach, or suggest each and every element of independent claims 25, 48, and 58 (and claims 26, 28, 30-34, 36-40, 44, 46-47, 49-55, 57, and 59 which respectively depend therefrom). Accordingly, this rejection should be withdrawn.

III.   Rejection of Claims 35 and 56 Under 35 U.S.C. §103(a)

Claims 35 and 56 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Robinson in view of Knight, *et al.* (US 6,571,234). Withdrawal of this rejection is respectfully requested for at least the following reasons. Knight, *et al.* discloses a system that automatically classifies messages upon a message board and, like Robinson, does not disclose employing *a personality type* in connection with *predicting unknown attributes* as recited in independent claims 25, 48, and 58. Therefore, Knight, *et al.* fails to make up for the aforementioned deficiencies of Robinson – accordingly, this rejection should be withdrawn.
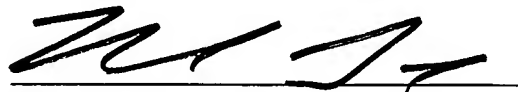
CONCLUSION

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

No fees are believed to be due. In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063.

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number below.

Respectfully submitted,

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